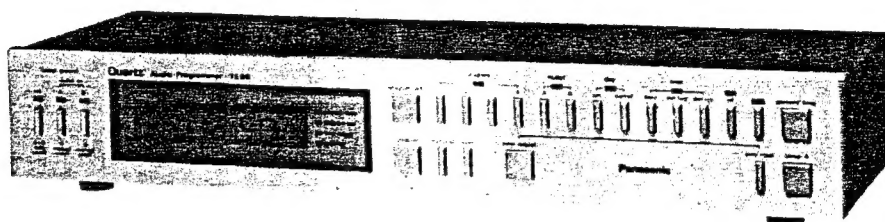


Service

Manual

Audio Programmer

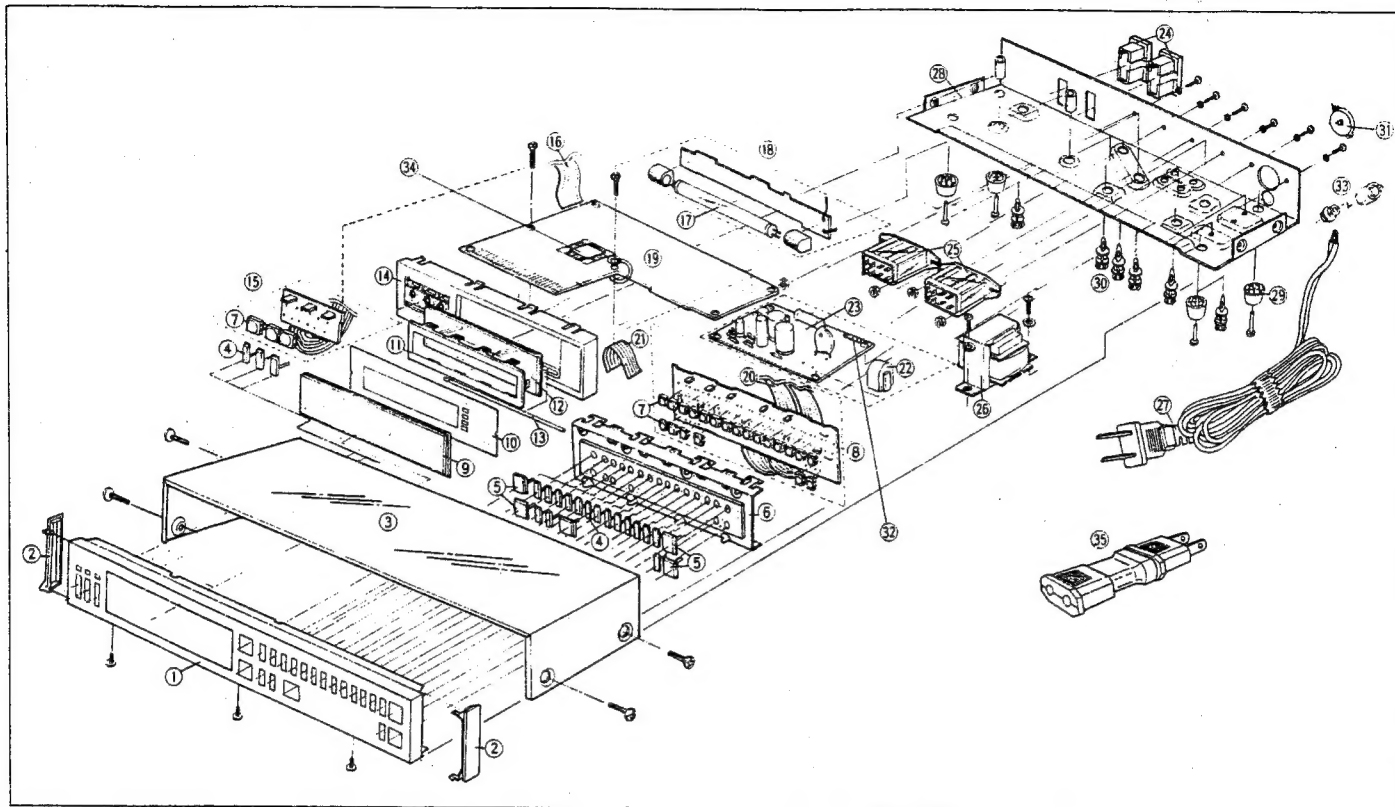
TE 96



Specifications

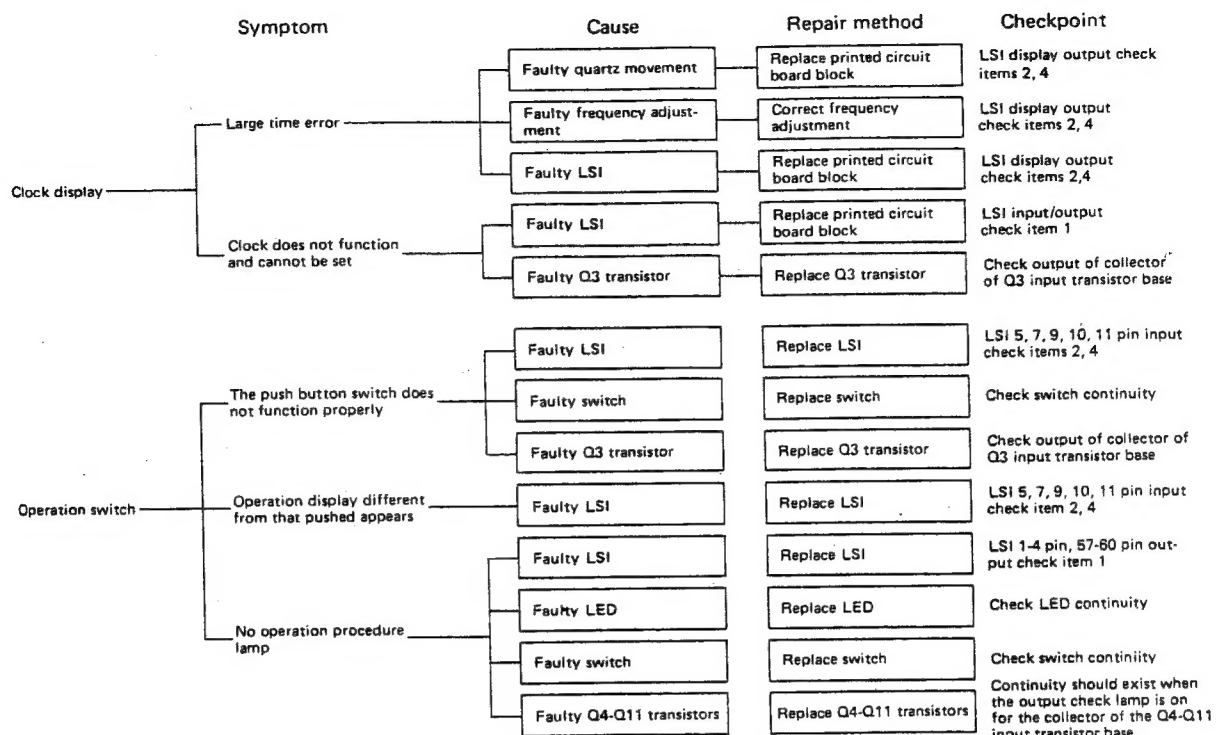
Power source:	220V AC 120/220/240V AC (PX only) 50~60Hz	Clock accuracy:	Quartz crystal controlled; within ± 15 seconds per month
Rated current:	Outlet A & B 5A each	Timer accuracy	Within +0.02 seconds against preset program
Power consumption:	6W for operation of programmer	Power failure compensation time:	About 20 minutes
Power capacity:	1,100W (220V, 240V AC) 600W (120V AC)	Dimensions:	74 x 430 x 151 mm
Timer type:	1 week type (For each day, maximum of 8 operations, 4 cycles of ON/OFF)	Weight:	2,500 g

EXPLODED VIEW

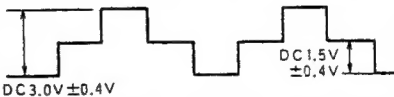
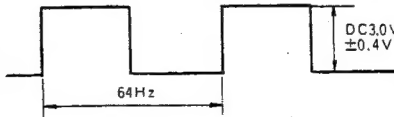
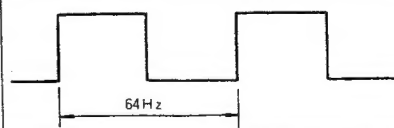
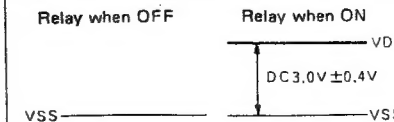


REPLACEMENT PARTS LIST

Ref. No.	Part No.	Part Name & Description	Per set	Remarks	Ref. No.	Part No.	Part Name & Description	Per set	Remarks
1	TE96003067I	Front panel (silver)	1		20	TE96013457	Block jambber A	2	
	TE96002067I	" (black)	1		21	TE96033457	" C	1	
	TE96003067II	" (silver) for PX	1		22	TE95002717	Line filter	1	TE95
2	TE96003167	Side panel for silver	2		23	TE96022107I	Printed circuit board B with fuse	1	
	TE96002167	" for black	2			TE96002507	Receptacle A (A2)	2	
3	TE96003087	Upper case	1			TE96002507C	" C (C2, w/earth)	2	
4	TE96013627	Key A (silver)	19		25	TE96005337I	HP Relay	2	
	TE96012627	" (black)	19		26	TE96002237I	Power transformer	1	
5	TE96023627	Key B (silver)	5		27	TE96002057	Cord A (A2)	1	
	TE96022627	" (black)	5			TE96002057C	Cord C (C2, w/earth)	1	
6	TE96003687	Key plate	1		28	TE96003097A	Lower case A for PX	1	
7	TE96002097	Switch	24			TE96003097C	" C (w/C2 hole)	1	
8	TE96032107	Printed circuit board C	1		29	TE96007517	Foot	4	
9	TE96003107	Front cover	1		30	TE96003997	PCB support	6	
10	TE96003377I	Display frame (gray)	1		31	TE90302017A	Voltage conversion switch (PX only)	1	TE95,97, 903
	TE96002377I	" (black)	1		32	TE96005267A	Fuse (160mA)	1	
11	TE96000217	Display holder	1		33	TE96000357I	Bushing	1	EA-5
12	TE96002367	LCD	1			TE96000357II	" for PX	1	EA-6
13	TE96002657	Conductive rubber	1			TE96002101	Circuit block (=8) + (15) + (18) + (19) + (23)	1	
14	TE96003727	Fixed frame	1		34	TE96002377	Micro computer	1	
15	TE96042107	Printed circuit board D	1		35	TE96002217A	Adapter sets (PX only)	1	
16	TE96023457	Block jambber B	1		36	TE96008107I	Operating instruction book	1	
17	TE96002317	Cold minus polarity discharge tube	1		37	TE96008007I	Individual box	1	
18	TE96052107	Printed circuit board E	1						
19	TE96012107	" A	1						



INSPECTION METHOD

Symptom	Check item	Oscilloscope		Normal voltage and wave shape	Diagnosis and location of problem	
		Probe	Ground lead			
Lights do not go on at all	1	VDD	(b)	(a)	DC 3.0V ± 0.4 V	No VDD voltage • Faulty transformer • Faulty ZD1 Zener diode
		Check common wave shape of display tube	(d)	(a)		No common wave shape • Faulty LSI
• Lights in a segment do not go on. • Lighted segment is faint. • Lighted segment flickers • All segments are lighted.	2	Check the LSI output wave shape	(c)	(a)		No LSI output when lights on • Faulty LSI LSI output exists when lights are on. • Faulty display tube
Discharge tube does not light up.	3	Check transformer output	(e)	(a)	AC 380V ± 40 V	No transformer output • Disconnected transformer wiring Transformer output exists • Faulty discharge tube
• Large time error • Clock does not function and cannot be set.	4	Check display output wave shape	(c)	(a)		No display output • Faulty LSI Display output exists • Faulty frequency adjustment Q3 transistor collector voltage is not at 0V
		Check Q3 transistor collector wave shape	(f)	(a)	0 V ————— VSS	Faulty transistor
• Relay does not function at set time • Relay functions even when not set	5	Check LSI output	(g)	(a)	Relay when OFF Relay when ON 	When the wave shape shown does not appear • Faulty LSI • Faulty Q1, Q2 transistors

TROUBLESHOOTING GUIDE

Symptom	Cause	Repair method	Checkpoint	
Time display	Lights do not go on at all	Broken display tube	Replace display tube	Check display tube damage
		Disconnected transformer wire	Replace transformer	Check Sides 1 and 2 120/220/240V AC 5.5±0.5V AC
		Poor connection between display tube and printed circuit board	Reassemble display light section	Check connection status of pattern and display tube electrodes
		Faulty LSI	Replace printed circuit board block	Check LSI output
	Lights in a segment do not go on	Poor connection between display tube and printed circuit board	Reassemble display light section	Check connection status of pattern and display tube electrodes
		Faulty soldering of LSI	Correct soldering	Check soldering
		Faulty LSI	Replace printed circuit board block	Check connection status of pattern and display tube electrodes
		Faulty display tube	Replace display tube	Check LSI output
	Lights in the wrong segment go on	Faulty LSI	Replace printed circuit board block	Check LSI output
		Faulty display tube	Replace display tube	Check LSI output
		Poor connection between display tube and printed circuit board	Reassemble display light section	Check connection status of pattern and display tube electrodes
	Lighted segment flickers	Faulty LSI	Replace printed circuit board	Check LSI output
		Faulty display tube	Replace display tube	Check LSI output
		Poor connection between display tube and printed circuit board	Reassemble display light section	Check connection status of pattern and display tube electrodes
	Lighted segment is faint	Faulty LSI	Replace printed circuit board block	Check LSI output
		Faulty display tube	Replace display tube	Check OSI output
		Poor connection between display tube and printed circuit board	Reassemble display light section	Check connection status of pattern and display tube electrodes
	All segments are lighted	Faulty LSI	Replace printed circuit board block	Check LSI output
		Poor connection between display tube and printed circuit board	Reassemble display light section	Check connection status of pattern and display tube electrodes
Discharge tube does not light up	Faulty discharge tube	Replace discharge tube	Check discharge tube voltage according to circuit check item 3	
	Disconnected transformer wire	Replace transformer	Check transformer side 2 according to circuit check item 3	
Timer	Relay functions even when not set	Faulty Q1, Q2 transistors	REplace Q1, Q2 transistors	Check output of collector of Q1, Q2 input transistor base
		Faulty LSI	Replace LSI	LSI 57, 58 pin output check item 5
		Faulty switch	Replace switch	Check switch continuity
	Relay does not function at set time	Faulty Q1, Q2 transistors	Replace Q1, Q2 transistors	Check output of collector of Q1, Q2 input transistors base
		Faulty LSI	Replace LSI	LSI 57, 58 pin output check item 5
		Faulty relay	Replace relay	If no continuity in relay coil, coil wiring disconnected
		Disconnected transformer wire	Replace transformer	Check transformer side 2 output
		Faulty switch	Replace switch	Check switch continuity
		Faulty LED	Replace LED	Check LED continuity
	Outlet light does not go on even when relay is turned on	Faulty LED	Replace LED	Check LED continuity
		Faulty LSI	Replace LSI	LSI 57, 58 pin output check item 5

CIRCUIT DIAGRAM

J. GLASBERG

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und Schaltungen
Albertstraße 12 - 1000 Berlin 62
Telefon 781 20 44 / 45

© refers to pins 17 to 51 of
LR3641 (SM-4A).

d refers to pins 53 and 54 of
LR3641 (SM-4A).

